

Application No.: 10/606,930  
First Named Inventor: Gerlach  
Amendment Dated: February 7, 2005  
Reply to Office Action of October 5, 2004

### Remarks/Argument

Claims 2-22 are in the application. Claim 1 is cancelled by this Amendment. Claim 22 is added by this Amendment. Claims 4-9 and 13 are amended as discussed above. As amended, claims 2, 13, 18, and 22 are in independent form. Claim 13 is amended to correct a typographical error. No additional limitation is believed to be imposed by this amendment.

As noted by the Examiner, Applicants' oath/declaration lists prior provisional application 60/402,010. This listing was an inadvertent error, and Applicants are not claiming priority from this provisional application.

### Examiner's Claim Objections

Claims 6-7, 11, and 19-20 were objected to due to indefiniteness. According to the Examiner, the term "generally" in each of these claims "is a relative term which renders the claim indefinite." Applicants respectfully disagree.

The M.P.E.P. specifically provides that there are no words which are *per se* indefinite. M.P.E.P. § 2173.02. "The examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph, is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available." The only test for definiteness under 35 U.S.C. 112, second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986).

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Further, the use of the word "generally" in a claim has been specifically approved. In *Ex parte Rodgers*, 27 U.S.P.Q. 2d 1738, 1742 (Bd. Pat. App. & Inter. 1992), language in a claim requiring that a bottom surface be "located below and extends generally parallel with respect to said chord line" was held to be neither vague nor indefinite. In Applicants' claims 6-7, 11, and 19-20, as was the case in *Rodgers*, the claim language is sufficient to apprise one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, paragraph 2.

Accordingly, Applicants request that the Examiners § 112 objections be withdrawn. If the objections are not withdrawn, Applicants respectfully request that the Examiner provide "an analysis as to why the phrase(s) used in the claim is 'vague and indefinite'" as provided by M.P.E.P. § 2173.02.

#### **Rejections under 35 U.S.C. § 102**

Claim 18 stands rejected as anticipated by U.S. Patent Publication No. 2004/0061054 filed by Kondo et al. (hereinafter "Kondo"). For section 102 anticipation, a single reference must disclose each and every element or step of the rejected claim. Applicants submit that the reference cited by the Examiner does not disclose all of the elements of the rejected claim.

Claim 18 claims "[a] method of detecting positive or negative charged particles, comprising selectively attracting positive ions or electrons from a target; if positive ions are selectively attracted, converting the positive ions to electrons by causing the positive ions to impact on a surface, the impact causing the emission of electrons; and detecting using an electron

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detector either the electrons emitted by the impact of the positive ions from the surface or electrons selectively attracted from the target and not impacting the surface." (emphasis added).

The reference cited by the Examiner does not teach an apparatus where electrons traveling from the target to the detector do not impact the surface of the ion to electron converter. The ion to electron converter described in Kondo is a multichannel plate electron multiplier which is positioned between the target and the electron detector. Any electrons emitted from the target surface and traveling toward the Kondo electron detector impact the sidewalls of the bundled glass pipes forming the microchannels causing the secondary emission of additional electrons. These secondary electrons may also impact the channel sidewalls giving rise to more electrons. Eventually, these multiplied secondary electrons are emitted from the back of the multichannel plate (the electron emitting surface) and are detected by the Kondo electron detector.

Applicants' Specification lists a number of advantages of Applicants' ion-to-electron converter over the use of multichannel plate detector/converters. Specifically, Applicants' Specification notes that "[t]he performance of channel electron detectors and channel plate detectors degrade over time. Also, the preamplifier for the channel electron multiplier or channel plate must be electrically floated, which makes the electronics more complex and prone to high voltage leakage currents generating detector output signal current instability."

Because the reference cited by the Examiner does not teach an apparatus where electrons traveling from the target to the detector do not impact the surface of the ion-to-electron converter, Kondo cannot anticipate Applicants' claim 18. Accordingly, Applicants respectfully request that the Examiner's § 102 rejection be withdrawn.

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### Rejections under 35 U.S.C. § 103(a)

#### *Claims 1-17 and 19-21*

Claims 1-17 and 19-21 stand rejected for obviousness under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0061054 filed by Kondo et al. (hereinafter "Kondo"). By this Response, Claim 1 is cancelled and claims 4-9 are amended. In the rejected claims, there are two independent claims—claim 2 (along with dependent claims 3-12) and claim 13 (along with dependent claims 14-17). Claims 19-21 are dependent on claim 18 discussed above.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Finally, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As discussed in greater detail below, a *prima facie* case of obviousness has not been established for claims 2-17 and 19-21 since the reference cited by the Examiner (when combined with the level of skill in the art) does not teach or suggest all of the claim limitations in the rejected claims.<sup>1</sup>

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<sup>1</sup> Although the remaining two elements are not discussed in great detail, Applicants also respectfully maintain that neither of the remaining criterion for obviousness is met for any of the rejected claims.

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*Claims 2-12*

Amended claim 2 (along with dependent claims 3-12) claims "[a] charged particle detector suitable for use in a focused ion beam system including a focused ion beam that can be directed to a target and that produces secondary particles upon impact of the ion beam with the target, the charged particle detector comprising: an input screen to which voltages can be selectively applied relative to the target so as to attract positive or negative secondary charged particles emitted from the target; an ion-to-electron converter including a material that emits electrons when impacted by charged particles from the target, said ion-to-electron converter being configurable in a first configuration to convert ions emitted from a target to electrons and configurable in a second configuration to pass electrons from the target through the ion-to-electron converter; and a scintillator detector for detecting electrons originating at the target and passing through the ion-to-electron converter or electrons originating in the ion-to-electron converter." (emphasis added).

As in claim 18 discussed above, the claim requires that the ion-to-electron converter be configurable to pass electrons from the target through the converter and on to the detector. This limitation is not taught or suggested by Kondo. Instead, Kondo teaches the use of a multichannel plate electron multiplier as an ion-to-electron converter. As a result, electrons passing from the target toward the detector will impact the walls of the microchannels in the converter producing cascade of secondary electrons. It is these secondary electrons which are emitted from the Kondo converter and ultimately detected.

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Further, as also discussed above, Applicants' Specification lists a number of advantages of Applicants' ion-to-electron converter over the use of multichannel plate detector/converters. Specifically, Applicants' Specification notes that "[t]he performance of channel electron detectors and channel plate detectors degrade over time. Also, the preamplifier for the channel electron multiplier or channel plate must be electrically floated, which makes the electronics more complex and prone to high voltage leakage currents generating detector output signal current instability."

Finally, Applicants also note that the Examiner does not suggest one of ordinary skill in the art would have found it obvious to use an ion-to-electron converter which is configurable to pass electrons from the target through the converter and on to the detector. As a result, because Kondo does not teach or suggest the claim limitation that the ion-to-electron converter be configurable to pass electrons from the target through the converter and on to the detector, a *prima facie* case of obviousness has not been established. Accordingly, Applicant requests that the § 103 objections to these claims be withdrawn.

#### *Claims 13-17*

Applicants' claim 13 (along with dependent claims 14-17) claims "[a]n ion-to-electron converter for use with an electron detector to detect ions originating from a target by causing the ions to generate electrons to be detected by the electron detector, the ion-to-electron converter comprising a material that when struck by an ion generates electrons for detection and having a structure such that when a first voltage is applied to the ion-to-electron converter, ions are attracted to the ion-to-electron converter, collide with a surface of the ion-to-electron converter,

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and generate electrons that are detected by the electron detector, and when a second voltage is applied, electrons pass through the ion-to-electron converter and are detected by the electron detector." (emphasis added).

As discussed above, claim 13 requires that when a second voltage is applied, electrons pass through the ion-to-electron converter to the electron detector. This limitation is not taught or suggested by Kondo. Instead, Kondo teaches the use of a multichannel plate electron multiplier as an ion-to-electron converter. As a result, electrons passing from the target toward the detector will impact the walls of the microchannels in the converter producing a cascade of secondary electrons. It is these secondary electrons which are emitted from the Kondo converter and ultimately detected.

Again, as discussed above, Applicants note that the Examiner does not suggest that this limitation would have been obvious to one of ordinary skill in the art. As a result, because Kondo does not teach or suggest the claim limitation, a *prima facie* case of obviousness has not been established. Accordingly, Applicant requests that the § 103 objections to these claims be withdrawn.

#### *All Remaining Claims*

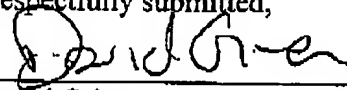
Applicant submits that the remaining claims, being dependent from claims that are allowable for reasons stated above, are also allowable. Accordingly, Applicant requests that the objections to these remaining claims also be withdrawn.

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### CONCLUSION

Applicants submit that all claims remaining in the application are in condition for allowance, and Applicants respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



David Griner  
Reg. No. 47,614  
Attorney for Applicants  
PO Box 164140  
Austin, TX 78716-4140  
Phone (512) 328-9510  
Facsimile (512) 306-1963  
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